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EXAMINER
BELANI, KISHIN G

ART UNIT	PAPER NUMBER
2109	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,910	ANSTEY ET AL.	
	Examiner	Art Unit	
	Kishin G. Belani	2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/31/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/21/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 35-40 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

Consider **claim 35**, "computer-readable storage medium" in accordance with the applicant's specification may be optical, electromagnetic, infrared, or a stream of information downloaded from a network (see paragraph 0041). This subject matter is not limited to that which falls within a statutory category of invention because it is not limited to a process, machine, manufacture, or a composition of matter. Instead it may include a form of energy. Energy does not fall within a statutory category since it is clearly not a series of steps or acts to constitute a process, not a mechanical device or combination of mechanical devices to constitute a machine, not a tangible physical article or object which is some form of matter to be a product and constitute a manufacture, and not a composition of two or more substances to constitute a composition of matter.

Claims 36-40 are also rejected under U.S.C. 101 because of their failure to resolve the deficiency of **claim 35**.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 8-14, 19, 22, 23, 25, 28-30, 33, 35, and 39-42 are rejected under 35 U.S.C. 102(e) as being anticipated by **Rehm (US Patent Application Publication # 2004/0117470 A1).**

Consider **claim 1**, Rehm clearly shows and discloses a method to aggregate evaluation of at least one metric across a plurality of resources (Fig. 3 that clearly shows unavailability of a system due to failure of components 1, 2, and 3 (one metric represented by availability of components in blocks 31, 32, and 33) and their down time aggregation in block 34); comprising:

determining an aggregate evaluation of a selected metric for a group of resources of the plurality of resources (Fig. 3; paragraph 0032, lines 4-11 and paragraph 0033 that show and describe the method for aggregating a metric of component failures);

adjusting the aggregate evaluation of the selected metric in response to evaluation criteria (paragraph 0034, lines 1-8 that disclose how the redundancy of components 1,2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered); and

determining if any predetermined thresholds have been violated (paragraph 0034, lines 3-6 and lines 10-12 that define the threshold for service outage based on the redundancy of components 1, 2, and 3, i.e. if the three components are redundant, the service outage is only during time period 343. If the components are not redundant, the service outage is during every time period 341-345).

Consider **claim 8**, and **as applied to claim 1 above**, Rehm clearly shows and discloses a method wherein the selected metric is one of a resource availability metric, a resource performance metric, a resource response time metric, a resource utilization metric and a memory utilization metric (Fig. 3, Component blocks 31, 32, and 33 which show that the selected metric is one of a resource availability metric).

Consider **claim 9**, and **as applied to claim 1 above**, Rehm clearly shows and discloses a method to derive the evaluation criteria from a service level agreement (paragraph 0034, lines 1-8 that disclose how the redundancy (determined from the service level agreement, as described in paragraph 0042 and shown in Fig, 4, block 45) of components 1,2, and 3 affects the determination of real service outage, which is only

met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered).

Consider **claim 10**, Rehm clearly shows and discloses a method to aggregate availability across a plurality of resources (Fig. 3 that clearly shows a metric represented by the availability of component blocks 31, 32, and 33 being aggregated in block 34), comprising:

determining a total aggregate downtime for a group of resources of the plurality of resources during a predetermined time period (Fig. 3 that shows aggregated down time as a black dot for each of the components 1, 2, and 3; paragraphs 0032 and 0033 that describe the method of aggregating the downtime of each of the three components in block 34);

adjusting the total aggregate downtime in response to an aggregation criteria (paragraph 0034 that teaches how to adjust the service outage time based on the redundancy of the components 1-3); and

determining one of an availability or an unavailability for the group of resources in response to an adjusted total aggregate downtime (paragraph 0034, lines 3-8 which disclose how the redundancy of components 1, 2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered).

Consider **claim 11**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method wherein adjusting the total aggregate downtime comprises applying the aggregation criteria to any overlapping downtime between resources (Fig. 3, component blocks 31, 32, and 33 that list downtimes for each component. The service outage downtime is dependent on whether or not the components are redundant to each other. If all three components are redundant, the adjusted total aggregate downtime is when the component downtime overlaps for all three components, e.g. in the time period 343 of aggregate block 34. However, if none of the components is redundant, the service outage downtime is during all time periods 341-345; paragraphs 0033 and 0034 describe the adjustments to the total aggregate downtime in more details).

Consider **claim 12**, and **as applied to claim 10 above**, Rehm shows and discloses a method comprising deriving the aggregation criteria from a service level agreement (Fig. 4, block 45; paragraphs 0042, lines 1-10 that describe the adjustments to the total aggregate downtime based on the SLA (Service Level Agreement), including an example of redundant components resulting in the reduced service outage time).

Consider **claim 13**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method wherein adjusting total aggregate downtime comprises counting downtime in response to a preset number of resources in the group of resources being unavailable simultaneously (Fig. 3, component blocks 31, 32, and 33 that list downtimes

for each component. The service outage downtime is dependent on whether or not the components are redundant to each other. If all three components are redundant, the adjusted total aggregate downtime is when the component downtime overlaps for all three components, e.g. in the time period 343 of aggregate block 34. However, if none of the components is redundant, the service outage downtime is during all time periods 341-345; paragraphs 0033 and 0034 describe the adjustments to the total aggregate downtime in more details).

Consider **claim 14**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method comprising defining the availability or unavailability for the group of resources as at least one of a percentage of total time the resources are available or unavailable during the predetermined time period, or a number of resources available or unavailable during the predetermined time period (Fig. 3, blocks 31-33 that show downtime as a black dot for each of the components 1, 2, and 3 during a predetermined time period; paragraphs 0032 and 0033 that describe the method of aggregating the downtime of each of the three components in block 34, by the number of black dots showing unavailability in terms of the number of resources being down in the time period).

Consider **claim 19**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method that defines the group of resources as a static list (Fig. 3, list of

blocks 31-33 that are statically marked as component 1, component 2, and component 3).

Consider **claim 22**, Rehm clearly shows and discloses a system to aggregate evaluation of at least one metric across a plurality of resources (Fig. 1, block 100 that shows an SLA service delivery infrastructure; paragraph 0016 that describes the process of generating trouble tickets whenever there is a failure of components in the system), comprising:

a processor (Fig. 1, servers 11a and 11b with Trouble Ticket Collection module 10; paragraph 0017 that provides details of the infrastructure block 100); and

an evaluator operable on the processor to determine an aggregate evaluation of a selected metric for a group of resources of the plurality of resources, to adjust the aggregate evaluation of the selected metric in response to evaluation criteria, and to determine if any predetermined thresholds have been violated (Fig. 2, block 240 that shows an aggregator calculator module; paragraph 0025, lines 1-4 that disclose the function of the aggregator calculator module 240; paragraphs 0026 and 0027 that describe adjustment to the component aggregate downtime record based on the component redundancy specified in the SLA, before concluding that any service availability threshold has been violated).

Consider **claim 23**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system comprising a data source to store metric information from each

resource of the group of resources (Fig. 1, database block 12 that is used to store metric information from each resource of the group of resources; Fig. 2, Trouble Ticket Storage block 214 also represents the same data store; paragraph 0022, lines 17-18 that disclose the same data store).

Consider **claim 25**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system comprising means for presenting the aggregate evaluation of the selected metric for the group of resources (Fig. 1, User Interface block 17 and display blocks 18a and 18b that are used to present the aggregate evaluation of the selected metric for the group of resources from database 12; paragraph 0017, lines 06-08 that disclose the user interface shown in Fig. 1).

Consider **claim 28**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system wherein the selected metric is one of a resource availability metric, a resource performance metric, a resource response time metric, a resource utilization metric and a memory utilization metric (Fig. 3, Component blocks 31, 32, and 33 which show that the selected metric is one of a resource availability metric).

Consider **claim 29**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system wherein the evaluation criteria is derived from a service level agreement to adjust the aggregated evaluation of the selected metric (paragraph 0034, lines 1-8 that disclose how the redundancy (determined from the service level

agreement, as described in paragraph 0042 and shown in Fig, 4, block 45) of components 1,2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered).

Consider **claim 30**, Rehm clearly shows and discloses a method to make a system to aggregate evaluation of at least one metric across a plurality of resources (Fig. 1, block 100 that shows an SLA service delivery infrastructure; paragraph 0016 that describes the method for the displayed system of generating trouble tickets whenever there is a failure of components within a system), comprising:

providing a processor (Fig. 1, servers 11a and 11b with Trouble Ticket Collection module 10; paragraph 0017 that provides details of the infrastructure block 100 that includes the processor servers 11a and 11b); and

providing an evaluator operable on the processor to determine an aggregate evaluation of a selected metric for a group of resources of the plurality of resources, to adjust the aggregate evaluation of the selected metric in response to evaluation criteria, and to determine if any predetermined thresholds have been violated (Fig. 2, block 240 that shows an aggregator calculator module; paragraph 0025, lines 1-4 that disclose the function of the aggregator calculator module 240; paragraphs 0026 and 0027 that describe adjustment to the component aggregate downtime record based on the component redundancy specified in the SLA, before concluding that any service availability threshold has been violated).

Consider **claim 33**, and **as applied to claim 30 above**, Rehm clearly shows and discloses the claimed invention including a method for providing a data source to store metric information from each resource of the group of resources (Fig. 1, database block 12 that is used to store metric information from each resource of the group of resources; Fig. 2, Trouble Ticket Storage block 214 also represents the same data store; paragraph 0022, lines 17-18 that disclose the same data store).

Consider **claim 35**, Rehm discloses computer-executable instructions for performing a method (Fig. 2, modules 210, 220, 240, 260, and 280 that include computer-executable instructions for the disclosed invention; claims 6-10 that disclose different computer-executable modules for the claimed system), comprising:

determining an aggregate evaluation of a selected metric for a group of resources of the plurality of resources (Fig. 3; paragraph 0032, lines 4-11 and paragraph 0033 that show and describe the method for aggregating a metric of component failures);

adjusting the aggregate evaluation of the selected metric in response to evaluation criteria (paragraph 0034, lines 1-8 that disclose how the redundancy of components 1,2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered); and

determining if any predetermined thresholds have been violated (paragraph 0034, lines 3-6 and lines 10-12 that define the threshold for service outage based on the

redundancy of components 1, 2, and 3, i.e. if the three components are redundant, the service outage is only during time period 343. If the components are not redundant, the service outage is during every time period 341-345).

Consider **claim 39**, and **as applied to claim 35 above**, Rehm provides computer executable instructions for selecting the metric from one of a resource availability metric, a resource performance metric, a resource response time metric, a resource utilization metric and a memory utilization metric (Fig. 3, Component blocks 31, 32, and 33 which show that the selected metric is one of a resource availability metric; claims 6-10 that disclose different computer-executable modules for the claimed system).

Consider **claim 40**, and **as applied to claim 35 above**, Rehm clearly provides a computer-readable medium having computer executable instructions for deriving evaluation criteria from a service level agreement (claims 6-10 that disclose computer modules with instructions for the disclosed invention; paragraph 0034, lines 1-8 that disclose how the redundancy (determined from the service level agreement, as described in paragraph 0042 and shown in Fig, 4, block 45) of components 1,2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3, although at least one component has failed in each of the five time intervals considered).

Consider **claim 41**, Rehm clearly shows and discloses a method to aggregate evaluation of at least one metric across a plurality of resources (Fig. 3 that clearly shows a metric represented by the availability of component blocks 31, 32, and 33 being aggregated in block 34), comprising:

determining a total aggregate downtime of a group of resources (Fig. 3, block 34 that shows aggregated down time as multiple black dots, one for each of the components 1, 2, and 3 (sum of all the black dots providing a total aggregate downtime of a group of resources); paragraphs 0032 and 0033 that describe the method of aggregating the downtime of each of the three components in block 34);

determining one of a percentage of resources available or unavailable during an evaluation interval, or a number of resources available or unavailable during the evaluation interval (Fig. 3, block 34 that shows a black dot (one for each of the components 1, 2, and 3) representing an unavailable resource; paragraphs 0032 and 0033 that describe the method of aggregating the downtime of each of the three components in block 34); and

determining if the percentage of resources or number of resources available in aggregate exceeds a specified breach value (paragraph 0034, lines 3-8 which disclose how the redundancy of components 1, 2, and 3 affects the determination of real service outage, which is only met by entry 343 in Fig. 3 based on the specified breach value, although at least one component has failed in each of the five time intervals considered).

Consider **claim 42**, and **as applied to claim 41 above**, Rehm provides a method comprising defining availability characteristics on individual base metrics and breach values based on a service level agreement (Fig. 3, blocks 31-33 that show availability characteristics on individual base metrics, i.e. availability of components 1, 2, and 3 during test periods being shown by the absence of black dots; paragraphs 0034, lines 3-12; and paragraph 0042 which describe how the service outage time is dependent on the service level agreement, in the sense that if the three components are redundant, there is service outage only when all three components are out of service. However, if the components are not redundant, there is service outage during all five blocks of the test period).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness

or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4, 6, 7, 15, 17, 26, 27, 31, 32, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehm (US Patent Application Publication # 2004/0117470 A1)** in view of **Carlson et al. (U.S. Patent Application Publication # 2003/0135609 A1).**

Consider **claim 2**, and **as applied to claim 1 above**, Rehm clearly shows and discloses a method for aggregating evaluation of at least one selected metric across a plurality of resources except determining an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources.

In the same field of endeavor, Carlson et al. clearly show and disclose a method for determining an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources (Fig. 3, groups of resources shown

as storage devices 230, Network Switches 232, and Host Bus Adaptors (HBAs) 234; paragraphs 0111-0115 which disclose Service Level Metrics 952, comprising Downtime metric 954, Number of Outages metric 956, Transaction Rate metric 958, Throughput metric 960, and Redundancy metric 966; paragraph 0119 that describes how the Service Monitor 950 aggregates the downtime of resources for the redundancy metric, thereby disclosing an aggregate evaluation of at least one chosen metric for at least one other group of resources for the plurality of resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to aggregate evaluation of more than one metrics across a plurality of resources, as taught by Carlson et al. in the method of Rehm, so that a true measure of a system's outage can be calculated based on the interdependent (redundancy vs. downtime) relationships between different groups of resources, thereby enabling one to determine if an SLA violation has indeed occurred.

Consider **claim 3**, and **as applied to claim 2 above**, Rehm as modified by Carlson et al. show and disclose a method for aggregating evaluation of at least one selected metric as well as one chosen metric across a plurality of resources (In Rehm's invention, Fig. 3 that shows unavailability of a system due to failure of resource components 1, 2, and 3 (represented by component blocks 31, 32, and 33) and their down time aggregation in block 34; in Carlson's invention, paragraphs 0111-0115 that

disclose several service metrics; paragraph 0119 which discloses aggregation of downtime for resources to determine if the redundancy metric has been violated).

However, when the selected metric and the chosen metric are the same metric, Rehm as modified by Carlson et al., still do show and disclose a method for aggregating evaluation of the selected metric across a plurality of resources.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to aggregate evaluation of a selected metric and at least one chosen metric, when they are the same metric across a plurality of resources in the method of Rehm, as modified by Carlson et al., so that aggregation of any metric's resources can be determined irrespective of whether a metric is an independent metric or inter-dependent on another metric.

Consider **claim 4**, and **as applied to claim 2 above**, Rehm, as modified by Carlson et al., clearly show and disclose a method for aggregating evaluation of at least one selected metric and one other chosen metric across a plurality of resources except determining a combined aggregate evaluation for all metrics and all groups of resources associated with each metric.

In the same field of endeavor, Carlson et al. clearly show and disclose a method to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric (Fig. 18 that shows a flowchart for aggregating all service metrics; paragraph 0126, lines 1-9 which describe the measurement of the service metrics 952 (made up of individual metrics 954, 956, 958, 960, and 966),

thereby disclosing a combined aggregate evaluation for all metrics and all groups of resources associated with each metric).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric, as taught by Carlson et al. in the method of Rehm, so that a true measure of the downtime for the entire system and a breach of the service level agreement can be evaluated based on service level parameters such as redundancy of resources and acceptable outages of certain resources at specific time periods.

Consider **claim 6**, and **as applied to claim 2 above**, Rehm, as modified by Carlson et al., clearly show and disclose a method for aggregating evaluation of at least one selected metric and one other chosen metric across a plurality of resources except forming each group of resources of the plurality of resources using a predetermined criteria.

In the same field of endeavor, Carlson et al. clearly show and disclose a method to form each group of resources of the plurality of resources using a predetermined criterion (Fig. 3 that shows different resource types grouped together as storage devices 230, switches 232, and HBAs (Host Bus Adaptors) 234; these resources being grouped together based on their functionality, i.e. for data storage, network connections, and host connections; paragraphs 0060-0062 provide the details for grouping these resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form each group of resources of the plurality of resources using a predetermined criteria, as taught by Carlson et al. in the method of Rehm, so that service metrics can be evaluated for each group of resources to determine if any group is in violation of the service level agreement.

Consider **claim 7**, and **as applied to claim 6 above**, Rehm, as modified by Carlson et al., clearly show and disclose a method for aggregating evaluation of at least one selected metric and one other chosen metric across a plurality of resources except disclosing that each group of resources contains a similar type of resource.

In the same field of endeavor, Carlson et al. clearly disclose that each group of resources contains a similar type of resource (Fig. 3 that shows different resource types grouped together as storage devices 230, switches 232, and HBAs (Host Bus Adaptors) 234 based on their functionality; paragraphs 0060-0062 provide the details for grouping these resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to group resources by their type, as taught by Carlson et al. in the method of Rehm, so that service metrics can be evaluated for each group of resources to determine if any group is in violation of the service level agreement.

Consider **claim 15**, and **as applied to claim 10 above**, Rehm discloses the claimed invention except disclosing a method for determining a total aggregated

downtime for all resources in at least one other group of resources of the plurality of resources.

In the same field of endeavor, Carlson et al. clearly show and disclose a method for determining a total aggregated downtime for all resources in at least one other group of resources of the plurality of resources (Fig. 3, groups of resources shown as storage devices 230, Network Switches 232, and Host Bus Adaptors (HBAs) 234; paragraphs 0111-0115 which disclose Service Level Metrics 952, comprising Downtime metric 954, Number of Outages metric 956, Transaction Rate metric 958, Throughput metric 960, and Redundancy metric 966; paragraph 0119 that describes how the Service Monitor 950 aggregates the downtime of resources for the redundancy metric, thereby disclosing an aggregate evaluation of at least one chosen metric for at least one other group of resources for the plurality of resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to aggregate evaluation of more than one metrics across a plurality of resources, as taught by Carlson et al. in the method of Rehm; so that a true measure of a system's outage can be calculated based on the independent and interdependent relationships between different groups of resources, thereby enabling one to determine if an SLA violation has indeed occurred.

Consider **claim 17**, and **as applied to claim 15 above**, Rehm as modified by Carlson et al., clearly show and disclose a method for determining a total aggregated downtime for all resources in at least one other group of resources of the plurality of

resources, except disclosing a method for determining a combined aggregate downtime for all groups of resources.

In the same field of endeavor, Carlson et al. clearly show and disclose a method to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric (Fig. 18 that shows a flowchart for aggregating all service metrics; paragraph 0126, lines 1-9 which describe the measurement of the service metrics 952 (made up of individual metrics 954, 956, 958, 960, and 966), thereby disclosing a combined aggregate evaluation for all metrics and all groups of resources associated with each metric).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric, as taught by Carlson et al. in the method of Rehm, so that a true measure of the downtime for the entire system and a breach of the service level agreement can be evaluated based on service level parameters such as redundancy of resources and acceptable outages of certain resources at specific time periods.

Consider **claim 26**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system for aggregating evaluation of at least one selected metric across a plurality of resources, except means to determine an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources.

In the same field of endeavor, Carlson et al. clearly show and disclose a system for determining an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources (Fig. 3, groups of resources shown as storage devices 230, Network Switches 232, and Host Bus Adaptors (HBAs) 234; paragraphs 0111-0115 which disclose Service Level Metrics 952, comprising Downtime metric 954, Number of Outages metric 956, Transaction Rate metric 958, Throughput metric 960, and Redundancy metric 966; paragraph 0119 that describes how the Service Monitor 950 aggregates the downtime of resources for the redundancy metric, thereby disclosing an aggregate evaluation of at least one chosen metric for at least one other group of resources for the plurality of resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a system to aggregate evaluation of more than one metrics across a plurality of resources, as taught by Carlson et al. in the system of Rehm; so that a true measure of a system's outage can be calculated based on the independent and interdependent relationships between different groups of resources, thereby enabling one to determine if an SLA violation has indeed occurred.

Consider **claim 27**, and **as applied to claim 26 above**, Rehm, as modified by Carlson et al., clearly show and disclose a system for aggregating evaluation of at least one selected metric and one chosen metric across a plurality of resources except the means to determine a combined aggregate evaluation for all chosen metrics and all groups of resources associated with each metric.

In the same field of endeavor, Carlson et al. clearly show and disclose a system to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric (Fig. 18 that shows a flowchart for aggregating all service metrics; paragraph 0126, lines 1-9 which describe the measurement of the service metrics 952 (made up of individual metrics 954, 956, 958, 960, and 966), thereby disclosing a combined aggregate evaluation for all metrics and all groups of resources associated with each metric).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric, as taught by Carlson et al. in the system of Rehm, so that a true measure of the downtime for the entire system and a breach of the service level agreement can be evaluated based on service level parameters such as redundancy of resources and acceptable outages of certain resources at specific time periods.

Consider **claim 31**, and **as applied to claim 30 above**, Rehm clearly shows and discloses a method for aggregating evaluation of at least one selected metric across a plurality of resources except providing means to determine an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources.

In the same field of endeavor, Carlson et al. clearly show and disclose means to determine an aggregate evaluation of at least one chosen metric for at least one other

group of resources of the plurality of resources (Fig. 3, groups of resources shown as storage devices 230, Network Switches 232, and Host Bus Adaptors (HBAs) 234; paragraphs 0111-0115 which disclose Service Level Metrics 952, comprising Downtime metric 954, Number of Outages metric 956, Transaction Rate metric 958, Throughput metric 960, and Redundancy metric 966; paragraph 0119 that describes how the Service Monitor 950 aggregates the downtime of resources for the redundancy metric, thereby disclosing an aggregate evaluation of at least one chosen metric for at least one other group of resources for the plurality of resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide means to aggregate evaluation of more than one metrics across a plurality of resources, as taught by Carlson et al. in the method of Rehm; so that a true measure of a system's outage can be calculated based on the independent and interdependent relationships between different groups of resources, thereby enabling one to determine if an SLA violation has indeed occurred.

Consider **claim 32**, and **as applied to claim 30 above**, Rehm clearly shows and discloses a method for aggregating evaluation of at least one selected metric across a plurality of resources except provide means to determine a combined aggregate evaluation of all chosen metrics and all groups of resources associated with each metric.

In the same field of endeavor, Carlson et al. clearly show and disclose a method with means to determine a combined aggregate evaluation for all chosen metrics and all

groups of resources associated with each metric (Fig. 18 that shows a flowchart for aggregating all service metrics; paragraph 0126, lines 1-9 which describe the measurement of the service metrics 952 (made up of individual metrics 954, 956, 958, 960, and 966), thereby disclosing a combined aggregate evaluation for all metrics and all groups of resources associated with each metric).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine a combined aggregate evaluation for all metrics and all groups of resources associated with each metric, as taught by Carlson et al. in the method of Rehm, so that a true measure of the downtime for the entire system and a breach of the service level agreement can be evaluated based on service level parameters such as redundancy of resources and acceptable outages of certain resources at specific time periods.

Consider **claim 36**, and **as applied to claim 35 above**, Rehm provides computer-readable medium having computer executable instructions for aggregating evaluation of at least one selected metric across a plurality of resources except providing means to determine an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources.

In the same field of endeavor, Carlson et al. clearly provide means to determine an aggregate evaluation of at least one chosen metric for at least one other group of resources of the plurality of resources (Claim 25 and abstract that disclose a computer readable medium with instructions for the claimed invention; Fig. 3, groups of resources

shown as storage devices 230, Network Switches 232, and Host Bus Adaptors (HBAs) 234; paragraphs 0111-0115 which disclose Service Level Metrics 952, comprising Downtime metric 954, Number of Outages metric 956, Transaction Rate metric 958, Throughput metric 960, and Redundancy metric 966; paragraph 0119 that describes how the Service Monitor 950 aggregates the downtime of resources for the redundancy metric, thereby disclosing an aggregate evaluation of at least one chosen metric for at least one other group of resources for the plurality of resources).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide means (in the form of computer instructions on a computer readable medium) to aggregate evaluation of more than one metrics across a plurality of resources, as taught by Carlson et al. in the method of Rehm; so that a true measure of a system's outage can be calculated based on the independent and interdependent relationships between different groups of resources, thereby enabling one to determine if an SLA violation has indeed occurred.

Consider **claim 37**, and **as applied to claim 36 above**, Rehm, as modified by Carlson et al., provide computer executable instructions for aggregating evaluation of at least one selected metric across a plurality of resources except determining a combined aggregate evaluation for all chosen metrics and all groups of resources associated with each metric.

In the same field of endeavor, Carlson et al. clearly provide means in the form of computer executable instructions on a computer-readable medium to determine a

combined aggregate evaluation for all chosen metrics and all groups of resources associated with each metric (Claim 25 and the abstract that disclose a computer-readable medium with instructions for the claimed invention; Fig. 18 that shows a flowchart for aggregating all service metrics; paragraph 0126, lines 1-9 which describe the measurement of the service metrics 952 (made up of individual metrics 954, 956, 958, 960, and 966), thereby disclosing a combined aggregate evaluation for all metrics and all groups of resources associated with each metric).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide computer executable instructions for determining a combined aggregate evaluation for all chosen metrics and all groups of resources associated with each metric, as taught by Carlson et al. in the method of Rehm; so that a true measure of the downtime for the entire system and a breach of the service level agreement can be evaluated based on service level parameters such as redundancy of resources and acceptable outages of certain resources at specific time periods.

Claims 5, 16, 18, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehm (US Patent Application Publication # 2004/0117470 A1)** in view of **Carlson et al. (U.S. Patent Application Publication # 2003/0135609 A1)** and further in view of **Bartz et al. (U.S. Patent Publication # 6,701,342 B1).**

Consider **claim 5**, and **as applied to claim 4 above**, Rehm, as modified by Carlson et al., clearly show and disclose a method for determining a combined aggregate evaluation for all metrics and all groups of resources associated with each metric except adjusting the combined aggregate evaluation in response to the evaluation criteria.

In the same field of endeavor, Bartz et al. clearly disclose a method for adjusting the combined aggregate evaluation in response to the evaluation criteria (Fig. 6, blocks 81, 82, 91, 92, and 100; column 9, lines 30-67 and column 10, lines 1-11 which disclose two Service Level Objectives SLO1 and SLO2 being evaluated. The test fails SLO1 objective (Throughput < 50 kb/sec for 5 minutes) in time block 84, and it fails the SLO2 objective (Response Time > 5 seconds for 2 minutes) 2 minutes after the beginning of time block 84, lasting for 4 minutes. Since the SLO1 violation begins at the end of 5-minute grace period, the first five minutes of SLO1 violation are not considered as a violation of the Service Level Agreement. Likewise, the first 2 minutes of SLO2 violations are not considered as a violation of the Service Level Agreement. When both SLO1 and SLO2 violations occur concurrently after their individual grace periods have expired (in the sixth minute into time block 84), a breach of the Service Level Agreement (SLO1 AND SLO2 violation) has occurred, thereby disclosing adjustment to the combined aggregate evaluation in response to the evaluation criteria).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for adjusting the combined aggregate evaluation in response to the evaluation criteria, as taught by Bartz et al. in

the method of Rehm as modified by Carlson et al., so that a more realistic determination can be made by evaluating multiple independent or inter-dependent metrics whether or not any Service Level Agreement clause has been violated, and if so, for how long, in order to assess appropriate amount of penalties for non-compliance to the agreement.

Consider **claim 16**, and **as applied to claim 15 above**, Rehm as modified by Carlson et al., clearly show and disclose a method for determining a total aggregated downtime for all resources in at least one group (availability of components 1-3) of resources of the plurality of resources.

However, Rehm as modified by Carlson et al. does not explicitly disclose a method for determining an aggregate downtime for each group of resources based on different aggregation criteria for each group.

In the same field of endeavor, Bartz et al. clearly disclose a method for determining an aggregate downtime for each group of resources based on a different aggregation criteria for each group (column 11, lines 34-55 which disclose SLOs for two servers (server1 and server2) whose downtime computation is based on two different aggregating criteria, one for response time and the other for availability).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for determining an aggregate downtime for each group of resources based on a different aggregation criteria for each group, as taught by Bartz et al. in the method of Rehm as modified by Carlson et al., so that service level agreement requirements can be mapped into service level objectives

that form the basis for determining if the breach of the service level agreement has occurred during a test.

Consider **claim 18**, and **as applied to claim 17 above**, Rehm, as modified by Carlson et al., clearly show and disclose a method for determining a combined aggregate downtime for all groups of resources.

However, Rehm as modified by Carlson et al., do not explicitly disclose a method for determining if any thresholds have been violated by the combined aggregate downtime.

In the same field of endeavor, Bartz et al. clearly disclose a method for determining if any thresholds have been violated by the combined aggregate downtime (Fig. 6, blocks 81, 82, 91, 92, and 100; column 9, lines 30-67 and column 10, lines 1-11 which disclose two Service Level Objectives SLO1 and SLO2 being evaluated. The test fails SLO1 objective (Throughput < 50 kb/sec for 5 minutes) in time block 84, and it fails the SLO2 objective (Response Time > 5 seconds for 2 minutes) 2 minutes after the beginning of time block 84, lasting for 4 minutes. Since the SLO1 violation begins at the end of 5-minute grace period, the first five minutes of SLO1 violation are not considered as a violation of the Service Level Agreement. Likewise, the first 2 minutes of SLO2 violations are not considered as a violation of the Service Level Agreement. When both SLO1 and SLO2 violations occur concurrently after their individual grace periods have expired (in the sixth minute into time block 84), a breach of the Service Level Agreement (SLO1 AND SLO2 violation) has occurred).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for determining if any thresholds have been violated by the combined aggregate downtime, as taught by Bartz et al. in the method of Rehm modified by Carlson et al., so that a determination can be made whether or not any Service Level Agreement clause has been violated, and if so, for how long, in order to assess appropriate amount of penalties for non-compliance to the agreement.

Consider **claim 38**, and **as applied to claim 37 above**, Rehm, as modified by Carlson et al., provide a computer-readable medium having computer executable instructions for determining a combined aggregate evaluation of all chosen metrics and all group of resources associated with each metric, except providing a computer-readable medium having computer executable instructions for adjusting the combined aggregate evaluation in response to the evaluation criteria.

In the same field of endeavor, Bartz et al. clearly provide computer instructions for a method for adjusting the combined aggregate evaluation in response to the evaluation criteria (Claims 31-32 that disclose computer programs for the claimed invention; Fig. 6, blocks 81, 82, 91, 92, and 100; column 9, lines 30-67 and column 10, lines 1-11 which disclose two Service Level Objectives SLO1 and SLO2 being evaluated. The test fails SLO1 objective (Throughput < 50 kb/sec for 5 minutes) in time block 84, and it fails the SLO2 objective (Response Time > 5 seconds for 2 minutes) 2 minutes after the beginning of time block 84, lasting for 4 minutes. Since the SLO1

violation begins at the end of 5-minute grace period, the first five minutes of SLO1 violation are not considered as a violation of the Service Level Agreement. Likewise, the first 2 minutes of SLO2 violations are not considered as a violation of the Service Level Agreement. When both SLO1 and SLO2 violations occur concurrently after their individual grace periods have expired (in the sixth minute into time block 84), a breach of the Service Level Agreement (SLO1 AND SLO2 violation) has occurred, thereby disclosing adjustment to the combined aggregate evaluation in response to the evaluation criteria).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for adjusting the combined aggregate evaluation in response to the evaluation criteria, as taught by Bartz et al. in the method of Rehm as modified by Carlson et al., so that a more realistic determination can be made by evaluating multiple independent or inter-dependent metrics whether or not any Service Level Agreement clause has been violated, and if so, for how long, in order to assess appropriate amount of penalties for non-compliance to the agreement.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehm (US Patent Application Publication # 2004/0117470 A1)** in view of **Black et al. (U.S. Patent Publication # 7,143,153 B1).**

Consider **claim 20**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method to aggregate availability across a plurality of resources, including

determining a total aggregate downtime for a group of resources of the plurality of resources during a predetermined time period; adjusting the total aggregate downtime in response to an aggregation criteria; and determining one of an availability or an unavailability for the group of resources in response to an adjusted total aggregate downtime.

However, Rehm does not explicitly disclose a method for defining the group of resources as a dynamic list.

In the same field of endeavor, Black et al. clearly disclose a method defining the group of resources as a dynamic list (column 48, lines 52-55; column 100, lines 41-45; and column 102, lines 21-28 which describe the use of a wildcard (*) to define a group of faults that can cause downtime, thereby defining a dynamic list).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to define the group of resources as a dynamic list, as taught by Black et al. in the method of Rehm; so that additional flexibility in selecting resources from a larger pool of available resources can be provided during Service Level Agreement test.

Claims 21, 24, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehm (US Patent Application Publication # 2004/0117470 A1)** in view of **Bartz et al. (U.S. Patent Publication # 6,701,342 B1).**

Consider **claim 21**, and **as applied to claim 10 above**, Rehm clearly shows and discloses a method to aggregate availability across a plurality of resources, including determining a total aggregate downtime for a group of resources of the plurality of resources during a predetermined time period; adjusting the total aggregate downtime in response to an aggregation criteria; and determining one of an availability or an unavailability for the group of resources in response to an adjusted total aggregate downtime.

However, Rehm does not explicitly disclose a method accounting for different time periods in adjusting the total aggregate downtime.

In the same field of endeavor, Bartz et al. clearly disclose a method accounting for different time periods in adjusting the total aggregate downtime (column 7, lines 25-44 and column 11, lines 25-55 which disclose how adjustments have been made to the total aggregate downtime based on weekday hours, weekends, and any other special days when service may or may not be needed).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to account for different time periods in adjusting the total aggregate downtime, as taught by Bartz et al. in the method of Rehm; so that only those time periods are considered for aggregating service downtime when the service continuity is really required, thereby keeping the cost of service level agreement within a reasonable range.

Consider **claim 24**, and **as applied to claim 22 above**, Rehm clearly shows and discloses a system for aggregating evaluation of at least one selected metric across a plurality of resources, except disclosing a system that comprises a service level management database to store service level management information.

In the same field of endeavor, Bartz et al. clearly disclose a system that comprises a service level management database to store service level management information (Fig. 7, block 100; column 13, lines 42-47 which disclose that a measurement manager 102 and a baseline manager 103 store the SLA measurement data in a measurement database (not shown in Fig. 7)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a service level management database to store service level management information, as taught by Bartz et al. in the system of Rehm; so that means can be provided to verify that the availability of service is in compliance with the Service Level Agreement benchmarks.

Consider **claim 43**, and **as applied to claim 41 above**, Rehm clearly shows and discloses a method for aggregating evaluation of at least one metric across a plurality of resources, determining a total aggregate downtime of a group of resources; determining one of a percentage of resources available or unavailable during an evaluation interval, or a number of resources available or unavailable during the evaluation interval; determining if the percentage of resources or number of resources available in aggregate exceeds a specified breach value.

However, Rehm does not explicitly disclose a method for obtaining times of unavailability or availability for each resource in a service level objective.

In the same field of endeavor, Bartz et al. clearly disclose a method for obtaining times of unavailability or availability for each resource in a service level objective (Fig. 6, blocks 81, 82, 91, 92, and 100; column 9, lines 30-67 and column 10, lines 1-11 which disclose two Service Level Objectives SLO1 and SLO2 being evaluated, and the times of unavailability or availability of a throughput providing resource and a response time providing resource are being extracted from the two service level objectives SLO1 and SLO2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method for obtaining times of unavailability or availability for each resource in a service level objective, as taught by Bartz et al. in the method of Rehm; so that a determination can be made while evaluating multiple metrics whether or not any Service Level Agreement clause has been violated, based on the information recorded for each resource in the Service Level Objective; and if so, for how long; in order to assess appropriate amount of penalties for non-compliance to the agreement.

Consider **claim 44**, and **as applied to claim 41 above**, Rehm clearly shows and discloses a method for aggregating evaluation of at least one metric across a plurality of resources, determining a total aggregate downtime of a group of resources; determining one of a percentage of resources available or unavailable during an evaluation interval,

or a number of resources available or unavailable during the evaluation interval; determining if the percentage of resources or number of resources available in aggregate exceeds a specified breach value.

However, Rehm does not explicitly disclose a method for adjusting for any schedule states in determining if a specified breach value is exceeded.

In the same field of endeavor, Bartz et al. clearly disclose a method for adjusting for any schedule states in determining if a specified breach value is exceeded (column 7, lines 25-44 and column 11, lines 25-55 which disclose how adjustments have been made to the total aggregate downtime based on weekday hours, weekends, and any other special days when service may or may not be needed).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a method to account for different time periods in adjusting the total aggregate downtime, as taught by Bartz et al. in the method of Rehm; so that only those time periods are considered for aggregating service downtime when the service continuity is really required, thereby keeping the cost of service level agreement within a reasonable range.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehm (US Patent Application Publication # 2004/0117470 A1)** in view of **Barkan et al. (U.S. Patent Publication # 6,925,493 B1).**

Consider **claim 34**, and **as applied to claim 30 above**, Rehm clearly shows and discloses the claimed invention except disclosing a method to provide a service level management database couplable to the processor to store service level management information.

In the same field of endeavor, Barkan et al. clearly disclose a method to provide a service level management database couplable to the processor to store service level management information (Fig. 2, SLA DB block 32 and SLA Engine block 31; column 5, lines 24-34 which describe the SLA Database 32 and SLA Engine 31).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a service level management database couplable to the processor to store service level management information, as taught by Barkan et al. in the method of Rehm; so that the SLA (Service Level Agreements) and associated management data can be stored in the database and processed by the processor linked to the database, in order to generate any non-compliance reports.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US Patent Application Publication: 2005/0071458 A1, inventor: Fisher et al., Assignee: IBM

US Patent Application Publication: 2004/0221038 A1, inventor: Clarke Jr. et al., Assignee: IBM

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Kishin G. Belani
K.G.B./kgb

March 5; 2007

RAFAEL PEREZ-GUTIERREZ
SUPERVISORY PATENT EXAMINER
3/12/07